

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings of claims in the application.

Listings of Claims:

1. (Currently Amended) A magnetic sensing element comprising a multilayer film including a first antiferromagnetic layer, a pinned magnetic layer, a non-magnetic material layer and a free magnetic layer in that order from the bottom,

wherein the free magnetic layer comprises a first free magnetic layer having a predetermined dimension in a track-width direction and a second free magnetic layer which is provided on the first free magnetic layer and which has a dimension in the track-width direction larger than that of the first free magnetic layer, a second antiferromagnetic layer for aligning a magnetization direction of the free magnetic layer in one direction is provided as a layer above the second free magnetic layer, and a pair of electrode layers ~~are~~is provided on both side portions of the multilayer film along the track-width direction.

2. (Original) The magnetic sensing element according to Claim 1, wherein the first free magnetic layer and the second free magnetic layer are provided as an integrated ferromagnetic layer.

3. (Original) The magnetic sensing element according to Claim 1, wherein a non-magnetic intermediate layer is provided between the first free magnetic layer and the second free magnetic layer.

4. (Previously Presented) The magnetic sensing element according to Claim 3, wherein the non-magnetic intermediate layer comprises at least one of Ru, Re, Pd, Os, Ir, Cr, Pt, Au, Cu and Rh.

5. (Original) The magnetic sensing element according to Claim 4, wherein the non-magnetic intermediate layer comprises Cu.

6. (Original) The magnetic sensing element according to Claim 1, wherein the dimension in the track-width direction of the first free magnetic layer is 0.18 μm or less.

7. (Original) The magnetic sensing element according to Claim 6, wherein the dimension in the track-width direction of the first free magnetic layer is 0.15 μm or less.

8. (Currently Amended) The magnetic sensing element according to Claim 1, wherein [(a difference calculated by subtracting a film thickness, along the height of the multilayer film, of the free magnetic layer in a track-width region from a film thickness, along the height of the multilayer film, of the free magnetic layer in both side regions of the track-width region) / the film thickness of the free magnetic layer in the track-width region] $\times 100$ (%) is within the range of -80% or more, but less than 0%.

9. (Currently Amended) The magnetic sensing element according to Claim 1, wherein a film thickness, along the height of the multilayer film, of the second free magnetic layer in both side regions of a track-width region is 10 angstroms or more, but 50 angstroms or less.

10. (Currently Amended) The magnetic sensing element according to Claim 1, wherein a film thickness, along the height of the multilayer film, of the free magnetic layer in a track-width region is 30 angstroms or more, but 50 angstroms or less.

11. (Currently Amended) The magnetic sensing element according to Claim 1, wherein the second antiferromagnetic layer is laminated on a track-width region of the second free magnetic layer as well, and a film thickness, along the height of the multilayer film, of the second antiferromagnetic layer on the track-width region is smaller than a thickness of the second antiferromagnetic layer, along the height of the multilayer film, in both side regions located on both sides thereof.

12. (Original) The magnetic sensing element according to Claim 11, wherein the second antiferromagnetic layer provided on the track-width region of the second free magnetic layer has a non-antiferromagnetic property, and both the side regions of the second antiferromagnetic layer have an antiferromagnetic property.

13. (Currently Amended) The magnetic sensing element according to Claim 11, wherein one of the second antiferromagnetic layer is provided on the track-width region of the second free magnetic layer so as to have a film thickness, along the height of the multilayer film, of 50 angstroms or less, and no antiferromagnetic layer is provided on the track-width region of the free magnetic layer.

14. (Cancelled)

15. (Previously Presented) The magnetic sensing element according to Claim 11, wherein a spacing in the track-width direction between inner end surfaces of both the side regions of the second antiferromagnetic layer is larger than the dimension in the track-width direction of the first free magnetic layer.

16. (Original) The magnetic sensing element according to Claim 11, wherein the second antiferromagnetic layer is directly laminated on the second free magnetic layer.

17. (Original) The magnetic sensing element according to Claim 16, wherein successive film formation of the second antiferromagnetic layer is performed on the second free magnetic layer.

18. (Currently Amended) The magnetic sensing element according to Claim 1, wherein ~~a pair~~ both side regions of the second antiferromagnetic layers₁ having a spacing therebetween along the track width direction, are provided on the second free magnetic layer₁ with a third antiferromagnetic layer provided therebetween the second antiferromagnetic layer and the second free magnetic layer.

19. (Currently Amended) The magnetic sensing element according to Claim 18, wherein a non-magnetic intermediate layer is laminated between the third antiferromagnetic layer and both side regions of the second antiferromagnetic layer.

20. (Previously Presented) The magnetic sensing element according to Claim 18, wherein a central portion of the third antiferromagnetic layer has a non-antiferromagnetic property, and both side regions of the third antiferromagnetic layer have an antiferromagnetic property.

21. (Currently Amended) The magnetic sensing element according to Claim 18, wherein a film thickness along the height of the magnetic film, of the third antiferromagnetic layer is 5 angstroms or more, but 50 angstroms or less.

22. (Original) The magnetic sensing element according to Claim 18, wherein successive film formation of the third antiferromagnetic layer is performed on the second free magnetic layer.

23. (Original) The magnetic sensing element according to Claim 1, wherein a pair of the second antiferromagnetic layers having a spacing in the track-width direction are provided on the second free magnetic layer through a pair of ferromagnetic layers provided so as to have a spacing in the track-width direction.

24. (Original) The magnetic sensing element according to Claim 23, wherein successive film formation of the second antiferromagnetic layers is performed on the ferromagnetic layers.

25. (Previously Presented) The magnetic sensing element according to Claim 23, wherein a total film thickness of a film thickness of the ferromagnetic layer and a film thickness of the second free magnetic layer is smaller than a total film thickness of the film thickness of the first free magnetic layer and a film thickness of the second free magnetic layer.

26. (Original) The magnetic sensing element according to Claim 23, wherein a non-magnetic intermediate layer is laminated between the second free magnetic layer and the ferromagnetic layer.

27. (Original) The magnetic sensing element according to Claim 26, wherein the non-magnetic intermediate layer comprises at least one noble metal of Ru, Re, Pd, Os, Ir, Pt, Au, Rh and Cu.

28. (Original) The magnetic sensing element according to Claim 26, wherein the non-magnetic intermediate layer comprises Cr.

29. (Cancelled)

30. (Original) The magnetic sensing element according to Claim 23, wherein the spacing in the track-width direction between the pair of second antiferromagnetic layers is larger than the dimension in the track-width direction of the first free magnetic layer.

31 – 48. (Cancelled)